mentation (on page 370 and *infra*) do not seem to the reviewer to be borne out by the facts. On page 373 he says: "The object of food-yolk, as is well known, is to enable the young to abbreviate its development by having its food supplied, and being consequently able to skip some of its ancestral stages." Instead of this being the fact, exactly the reverse is true, as has been shown by Balfour, Cunningham and myself.—*John A. Ryder.*

PHYSIOLOGY.

SOME NOTES ON RECALCIFICATION OF HUMAN TEETH.[1]—The extent to which human development depends upon the proper utilization of food is such that any fact bearing upon the success of this process becomes of paramount importance.

Living in a section of country where diet and drink are unusually deficient in calcific elements, my attention was many years ago called to the analogous condition of the teeth of children in that region, which, as a rule, are characterized by a corresponding deficiency in calcific elements.

Rapid and remarkable changes also occur in the condition of the teeth of adults—almost in direct ratio to their changes of environment in this respect. The "baker's bread" and other food products in most general use by the inhabitants of the region near the Gulf of Mexico, and more especially by the inhabitants of cities, are largely divested of calcific elements, while the water used for potable purposes is almost exclusively rain water, which, though a good solvent, contains no mineral elements.

The wonderful power of adaptation possessed by our race is such that people, living in this region for a number of generations, acquire the power of appropriating, from the meager supply thus furnished, the necessary elements to produce fairly good teeth; but the very large number of residents, not natives of this section, whose early life and the life of their ancestors, has been spent in regions where calcific elements were more abundant, and whose constitutional habit was accustomed to that abundance, are not able to assimilate, out of this meager supply, the requisite proportion of limesalts.

The function of utrition being dual in its character—removing effete and worn-out material on the one hand, while supplying the elements to maintain the integrity of the tissues on the other—the calcific elements, which form the inorganic basis of tooth-substance, and which rendered the teeth hard and firm, are carried away, while the supply to rebuild, being deficient in quantity, the corresponding amount is not restored, the teeth in consequence soon become decalcified and softened, falling an easy prey to unfavorable conditions.

[1] Read before Sections F and H in joint session, Buffalo Meeting A. A. A. S., August, 1886.

The fact of decalcification has long been recognized in the proverb concerning mothers: "For every child a tooth," not, however, that the material of the mother's tooth is absolutely taken away to build up those of the child, as was once taught, but that the increased demand for building material not being met with increased supplies sufficient to meet the demands of both mother and child, the teeth of the former suffer the consequences of lack of supplies.

The rapid decalcification thus occurring, is not a breaking down of the organic structure, and, if the material necessary to recalcify, is provided in a form which nature can appropriate, this softening may be prevented, or teeth which are already softened may be rendered hard and durable.

Observing these phenomena—this softening of teeth in persons coming from regions where good teeth are the rule, and the recalcification following their return to their old homes—led me to investigate the relations between environment and the development of teeth.

A careful observation of these phenomena not only showed the utter fallacy of the old *dictum*, that the teeth were subject to no changes after maturity, but also showed that there must be a system of circulation throughout the entire substance of the tooth, making this action of the nutrient function possible during the whole life of the tooth.

The fact of decalcification and recalcification, and continued nutrient action during life, being established by long observation, suggested the study of the best modes or methods of aiding nature in the work of recalcification.

Any possible change from ordinary diet, was found, as a rule, entirely inadequate; the natural suggestion of the direct administration of the phosphates—the chief inorganic elements in tooth substance—also proved entirely unsatisfactory, and led to the recognition of the truth that "nature will not take the elements from any ready-made source, but must elaborate her own pabulum."

Noting that the recalcification observed in the teeth of those visiting favorable regions was *not* due to the use of lime in the shape of phosphates, and that the difference between the nutrient elements of these same people, whether in the mountains or in the lowlands, lay more largely in the water they drank than in the food they ate, suggested the administration of aqua calcis; and this was followed by results as eminently gratifying as the use of the phosphates had proved unsatisfactory.

A new preparation of lime, in the form of a syrup of calcis, of much greater strength than the aqua calcis, and proportionately more prompt in its action and effects, has proved still more gratifying in its results.

An extended experience of many years has proved that by this

means it is not only possible to *restore* soft, decalcified teeth of all ages, but to *prevent* their decalcification, and also to forestall defective calcification of children's teeth, and even to improve the original type; so that we are now able to overcome not only bad environment but even bad heredity also.

Running *pasi passu* with my study and observations on the investigations of the microscopical histologists, the discoveries of McQuillen, S. P. Cutler, Carl Heitzman, Bodecker, Frank Abbott, A. H. Thompson and others, have demonstrated the existence of the system of nutrition, which, reasoning *a posteriori*, I assumed and announced many years ago.

The living fibrillæ radiating through the dentinal tubuli; the osmotic action between cementum and dentine, and dentine and enamel, and *vice versa*, the circulating currents through the areas of living matter between the enamel rods and prisms are, to-day, admitted histological facts, demonstrated by the microscope.

The tooth is raised to the dignity of a living organ, with a circulating system, carrying pabulum to all its parts to supply the hunger of its needy tissues.

A knowledge of these facts, and of the best methods of supplying material to maintain the integrity of the dental tissues, or of restoring those whose integrity has been impaired, is destined to have a far more important bearing upon human welfare than any degree of skill in operative or prosthetic oral surgery.—*J. R. Walker, D.D.S.*

ANTHROPOLOGY.[1]

FOLK-LORE.—The study of folk-lore may now be said to have passed through the collector stage and to have begun to assume the shape of a science. It was very much so with stone implements. Not many years ago a man who had a large collection of arrow-heads and such things was called an archæologist. But we now call by that name the men who utilize these things to spell out the history of human industry and invention. Folk-lore is to human knowledge, belief, literature, what the stone age is to the iron age. At first a folk-lorist was a man who collected songs, tales, legends, sayings, or who recorded the customs of agraphic peoples; he is now one who arranges these in order to find their law of being.

The folk-lorists of England have been wrestling for the last three years with the following questions:

1. The definition, the inclusions and exclusions of the term *folk-lore*.
2. The establishment of classific concepts for the material included. It is very easy to say, put things together that are alike; but it is most difficult to settle upon that characteristic of likeness which will combine our examples into what may be called natural genera, species etc. Connected with this idea of classific concepts is the associated one of terminology.
4. The anatomy of tales, customs, practices, etc., and the invention of a glossary of their organic parts, their *dramatis personæ*, their essential incidents.

[1] Edited by Prof. OTIS T. MASON, National Museum, Washington, D. C.